AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of classifying an image, comprising the steps of:

designating a number of query images to be extracted from a plurality of images stored in an image database in correspondence with feature data, the image database having each image stored in an image file corresponding to an image feature;

a) extracting [[a]] the query image images from a plurality of images stored in [[an]] the image database in correspondence with feature data;

b) searching, according to a predetermined similarity level, for a representative image resembling [[the]] a query image of the query images in a representative image classification database in which each group of images is represented by a respective representative image;

c) registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level; and

d) adding the query image into a group represented by the resembling representative image found as a result of the search according to the predetermined similarity level.

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2. (Original) The method as claimed in claim 1, wherein the images in the image database are obtainable by referring to the respective representative images in accordance with the predetermined similarity level.

3. (Original) The method as claimed in claim 1, further comprising a step of forming the groups into a hierarchical structure, wherein the forming step further includes the steps of:

a) extracting a further query image from the representative images in the representative image classification database;

b) searching, according to a further predetermined similarity level, for a further representative image resembling the further query image in a further representative image classification database in which groups of images are represented by respective further representative images;

c) registering the further query image as a new further representative image in the further representative image classification database when no resembling further representative image is found as a result of the search according to the further predetermined similarity level; and

d) adding the further query image into a group represented by the resembling further representative image found as a result of the search according to the further predetermined similarity level.

4. (Original) The classification method as claimed in claim 3, wherein the hierarchical structure is formed as layers of a directory of a file system for managing the images in the image database.

5. (Currently Amended) An image feature space display method comprising the steps of:

a) determining k representative points (k being an integer which is more than 1) in a feature space in response to a distance between points in the feature space and representative points representative of a plurality of feature spaces surrounding the feature space;

b) obtaining k sub-feature spaces by evenly allocating the points in the feature space into k representative points;

c) dividing a display space into sub-display regions of k segments, the display space being divided in a manner so that the sub-feature spaces correspond to the sub-display regions;

d) repeating the steps a) through c) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions,

wherein the feature space indicates at least one of a histogram feature, an edge feature, and a texture feature.

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6. (Original) The image feature space display method as claimed in claim 5, wherein the display space is two dimensional, wherein the feature space and the display space are divided into four sub-feature spaces and four sub-display regions in a grid manner, respectively, wherein the representative points are disposed proximally with respect to two feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to two other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces.

7. (Original) The image feature space display method as claimed in claim 5, wherein the display space is three dimensional, wherein the feature space and the display space are divided into eight sub-feature spaces and eight display regions in a grid manner, respectively, wherein the representative points are disposed proximally with respect to three feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to three other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces.

8. (Previously Presented) The image feature space display method as claimed in claim 5, wherein the points in the feature space represent images in a representative image classification database which are subject to the steps of:

    a) extracting a query image from a plurality of images stored in an image database in correspondence with feature data;

b) searching, according to a predetermined similarity level, for a representative image resembling the query image in the representative image classification database in which groups of images are represented by respective representative images;

c) registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level; and

d) adding the query image into a group represented by the resembling representative image found as a result of the search according to the predetermined similarity level.

9. (Original) The image feature space display method as claimed in claim 8, further comprising a step of forming the groups into a hierarchical structure, wherein the forming step further includes the steps of:

a) extracting a further query image from the representative images in the representative image classification database;

b) searching, according to a further predetermined similarity level, for a further representative image resembling the further query image in a further representative image classification database in which groups of images are represented by respective further representative images;

c) registering the further query image as a new further representative image in the further representative image classification database when no

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resembling further representative image is found as a result of the search according to the further predetermined similarity level; and

d) adding the further query image into a group represented by the resembling further representative image found as a result of the search according to the further predetermined similarity level.

10. (Currently Amended) An image feature space display method comprising the steps of:

a) dividing a feature space into three sub-feature spaces, the three sub-feature spaces being composed of two sub-feature spaces disposed within a prescribed radius with respect to two reference points in the feature space, and another sub-feature space other than the two sub-feature spaces;

b) dividing a display space into sub-display regions of three segments, the display space being divided in a same manner as the feature space so that the sub-feature spaces correspond to the sub-display regions;

c) repeating the steps a) and b) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

d) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions,

wherein the feature space indicates at least one of a histogram feature, an edge feature, and a texture feature.

11. (Original) The image feature space display method as claimed in claim 10, wherein the reference points are selected from points disposed nearest to representative points included in the two sub-feature spaces.

12. (Currently Amended) A program written to be executed with a computer and stored on a computer readable medium, comprising the steps of:

a) determining k representative points (k being an integer which is more than 1) in a feature space in response to a distance between points in the feature space and representative points representative of a plurality of feature spaces surrounding the feature space;

b) obtaining k sub-feature spaces by evenly allocating the points in the feature space into k representative points;

c) dividing a display space into sub-display regions of k segments, the display space being divided in a manner so that the sub-feature spaces correspond to the sub-display regions;

d) repeating the steps a) through c) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions,

wherein the feature space indicates at least one of a histogram feature, an edge feature, and a texture feature.

13. (Original) The program written to be executed with a computer as claimed in claim 12, wherein the display space is two dimensional, wherein the feature space and the display space are divided into four sub-feature spaces and four sub-display regions in a grid manner, respectively, wherein the representative points are disposed proximally with respect to two feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to two other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces.

14. (Original) The program written to be executed with a computer as claimed in claim 12, wherein the display space is three dimensional, wherein the feature space and the display space are divided into eight sub-feature spaces and eight display regions in a grid manner, respectively, wherein the representative points are disposed proximally with respect to three feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to three other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces.

15. (Previously Presented) The program written to be executed with a computer as claimed in claim 12, wherein the points in the feature space represent images in a representative image classification database which are subject to the steps of:

a) extracting a query image from a plurality of images stored in an image database in correspondence with feature data;

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b) searching, according to a predetermined similarity level, for a representative image resembling the query image in the representative image classification database in which groups of images are represented by respective representative images;

c) registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level; and

d) adding the query image into a group represented by the resembling representative image found as a result of the search according to the predetermined similarity level.

16. (Original) The program written to be executed with a computer as claimed in claim 15, further comprising a step of forming the groups into a hierarchical structure, wherein the forming step further includes the steps of:

a) extracting a further query image from the representative images in the representative image classification database;

b) searching, according to a further predetermined similarity level, for a further representative image resembling the further query image in a further representative image classification database in which groups of images are represented by respective further representative images;

c) registering the further query image as a new further representative image in the further representative image classification database when no

resembling further representative image is found as a result of the search according to the further predetermined similarity level; and

d) adding the further query image into a group represented by the resembling further representative image found as a result of the search according to the further predetermined similarity level.

17. (Currently Amended) A program written to be executed with a computer and stored on a computer readable medium, comprising the steps of:

a) dividing a feature space into three sub-feature spaces, the three sub-feature spaces being composed of two sub-feature spaces disposed within a prescribed radius with respect to two reference points in the feature space, and another sub-feature space other than the two sub-feature spaces;

b) dividing a display space into sub-display regions of three segments, the display space being divided in a same manner as the feature space so that the sub-feature spaces correspond to the sub-display regions;

c) repeating the steps a) and b) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

d) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions,

wherein the feature space indicates at least one of a histogram feature, an edge feature, and a texture feature.

18. (Original) The program written to be executed with a computer as claimed in claim 17, wherein the reference points are selected from points disposed nearest to representative points included in the two sub-feature spaces.

19. (Currently Amended) A computer readable medium having a program written thereto for processing with a computer, the recording medium comprising the steps of:

a) determining k representative points (k being an integer which is more than 1) in a feature space in response to a distance between points in the feature space and representative points representative of a plurality of feature spaces surrounding the feature space;

b) obtaining k sub-feature spaces by evenly allocating the points in the feature space into k representative points;

c) dividing a display space into sub-display regions of k segments, the display space being divided in a manner so that the sub-feature spaces correspond to the sub-display regions;

d) repeating the steps a) through c) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions,

wherein the feature space indicates at least one of a histogram feature, an edge feature, and a texture feature.

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20. (Original) The recording medium having a program written thereto for processing with a computer as claimed in claim 19; wherein the display space is two dimensional, wherein the feature space and the display space are divided into four sub-feature spaces and four sub-display regions in a grid manner, respectively, wherein the representative points are disposed proximally with respect to two feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to two other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces.

21. (Original) The recording medium having a program written thereto for processing with a computer as claimed in claim 19, wherein the display space is three dimensional, wherein the feature space and the display space are divided into eight sub-feature spaces and eight display regions in a grid manner, respectively, wherein the representative points are disposed proximally with respect to three feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to three other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces.

22. (Previously Presented) The recording medium having a program written thereto for processing with a computer as claimed in claim 19, wherein the points in the feature space represent images in a representative image classification database which are subject to the steps of:

a) extracting a query image from a plurality of images stored in an image database in correspondence with feature data;

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b)   searching, according a predetermined similarity level, for a representative image resembling the query image in the representative image classification database in which groups of images are represented by respective representative images;

c)   registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level; and

d)   adding the query image into a group represented by the resembling representative image found as a result of the search according to the predetermined similarity level.

23. (Original) The recording medium having a program written thereto for processing with a computer as claimed in claim 22, further comprising a step of forming the groups into a hierarchical structure, wherein the forming step further includes the steps of:

a)   extracting a further query image from the representative images in the representative image classification database;

b)   searching, according to a further predetermined similarity level, for a further representative image resembling the further query image in a further representative image classification database in which groups of images are represented by respective further representative images;

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c) registering the further query image as a new further representative image in the further representative image classification database when no resembling further representative image is found as a result of the search according to the further predetermined similarity level; and

d) adding the further query image into a group represented by the resembling further representative image found as a result of the search according to the further predetermined similarity level.

24. (Currently Amended) A computer readable medium having a program written thereto for processing with a computer, the recording medium comprising the steps of:

a) dividing a feature space into three sub-feature spaces, the three sub-feature spaces being composed of two sub-feature spaces disposed within a prescribed radius with respect to two reference points in the feature space, and another sub-feature space other than the two sub-feature spaces;

b) dividing a display space into sub-display regions of three segments, the display space being divided in a same manner as the feature space so that the sub-feature spaces correspond to the sub-display regions;

c) repeating the steps a) and b) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

d) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions,

wherein the feature space indicates at least one of a histogram feature, an edge feature, and a texture feature.

25. (Original) The recording medium having a program written thereto for processing with a computer as claimed in claim 24, wherein the reference points are selected from points disposed nearest to representative points included in the two sub-feature spaces.

26. (Previously Presented) The method of classifying an image as claimed in claim 1, wherein said method is a computer implemented method.

27. (Previously Presented) The image feature space display method as claimed in claim 5, wherein said method is a computer implemented method.